

Vineyards Benefit from Compost and Mulch

Performance of Compost and Mulch Impresses Grape Growers

Growers and researchers alike are finding compost and mulch to be indispensable aspects of vineyard floor management programs. In addition to recent evidence that use of compost may reduce root rot associated with phylloxera damage, growers are using compost and mulch for erosion control, soil moisture retention, nutrient content, and as a contribution to overall vineyard health.

What Is Compost? What Is Mulch?

Compost is a soil amendment resulting from the decomposition of organic materials such as leaves, grass, manure, and grape pomace. Commercial compost producers must subject the material to a “time and temperature” process that kills pathogens and weed seeds. Compost is usually applied and incorporated into the soil using mechanical equipment or in conjunction with irrigation practices. Compost is commonly added to soil to increase organic matter, retain moisture, increase microorganism diversity, and improve porosity.

Mulch is ground-up yard trimmings and/or wood chips. It is usually applied in a layer to the top of the soil and is not tilled in. Mulch is commonly used for erosion control and for weed suppression.

Both compost and mulch can complement other soil additives and management practices, such as fertilizers, pesticides, herbicides, and cover crops.

Slow Release of Nutrients

The slow release of nutrients makes compost the ideal soil amendment for the relatively low nitrogen demand of grapes. Research has shown that much of the nitrogen in compost is initially bound in an organic form and is therefore not readily available to plants. However, it is constantly and steadily being mineralized into an available form. In addition, compost provides

beneficial micronutrients that you may not normally add to the soil.

Mulch will also release the nutrients it contains as the organic material breaks down. However, this natural process will take several months or years depending upon several factors including the moisture content, the average air temperature, the thickness of the mulch layer, and the type of material used to make the mulch.

Compost May Contribute to Healthier Vines and Increased Yields

Andrew Hoxsey at Yount Mill Vineyards makes his own compost from 40 percent grape pomace, 30 percent turkey manure, and 30 percent composted yard trimmings from a local producer. “The primary reason we use compost is to add organic matter and boost microbiological activity,” says Hoxsey. He applies 3 to 4 tons per acre and notes that vines that were stressed in 1995 and 1996 now appear healthier.

Other vineyards have seen improved vigor and yield with compost applications. Bob Pestoni of Upper Valley Recycling, producer of Harvest Compost, contracted with Dr. Paul Skinner of Vineyard Investigations to study the effect of his compost on yields in Mondavi Vineyards. After three consecutive years, the study found that blocks with compost applied had increased yields of up to 0.9 tons per acre. Application rates for the study ranged from 2 to 8 tons per acre, with the 0.9 tons per acre increase in yield occurring in the 8-tons-per-acre treatment. Cost of the compost at \$24 per acre was recovered by an increased yield valued at \$1,350 per acre.

Beneficial Microorganisms in Compost May Help Reduce Phylloxera Damage

Researchers at the U.C. Davis Entomology Department are continuing to study the effects of compost on phylloxera damage. Under the direction of Dr. Jeffrey Granett, Ph.D. candidate

Don Lotter monitored organic vineyards in coastal areas for more than two years. In vineyards using compost, Lotter found a trend toward higher populations of beneficial microorganisms that are antagonists to *Fusarium*, an opportunistic fungus that feeds on roots damaged by phylloxera. Preliminary findings showed significantly less root rot (11.8 percent) in organically managed phylloxerated vineyards than on phylloxerated roots from conventionally managed vineyards (27.1 percent). Dr. Granett is continuing to monitor phylloxerated vineyards in Mendocino County for the beneficial effects of compost.

Erosion Control Use For Mulch

As vineyards expand onto hillsides, erosion control has become a growing concern and many jurisdictions are now requiring the implementation of measures to mitigate this potential problem. While many vineyards use straw or cover crops for erosion control, mulch made from urban yard trimmings can be a cost-effective alternative.

UC Cooperative Extension advisor Ben Faber conducted a demonstration study in Ventura County to examine the effectiveness of mulch and cover crops for erosion control in lemon orchards. "Results indicate that both mulch and cover crops are effective as weed suppression and erosion control methods," reports Faber. Coastal vineyards have recently begun to experiment with mulch for hillside erosion control. Vineyard managers may want to apply a minimum mulch depth of 3 inches. If mulch is applied at a 6-inch depth, the material will last for two or more seasons.

Common application rates

While application rates vary, most wine grape growers apply compost at a rate of 1 to 8 tons per acre in existing vineyards. An application of 5 to 20 tons per acre is typical for preparing bare land for new plantings. When determining an application rate, growers should consider soil analysis results and may wish to consult with a local viticulture advisor.

Finding Compost In Your Area

To locate a compost or mulch supplier in your area, request a copy of the "Compost and Mulch Source List" by either calling the California Integrated Waste Management Board (CIWMB) staff of the Organic Materials Management Program at (916) 341-6620 or check the Web site at www.ciwmb.ca.gov/Organics/Farming.

Making Your Own Compost

A number of wineries compost their own pomace, which solves a waste management issue and produces a valuable end product. While some wineries use pomace as the only feedstock, higher quality compost may result from adding other feedstock to the mix. Yard trimmings, animal bedding, and manure are good organic material additions. They can serve as bulking agents and may help to buffer the pH of the composting pile. Another option to raise soil pH is to add lime.

While CIWMB staff encourages on-farm composting, current regulations may govern agricultural composting in certain situations. Check with your local enforcement agency (LEA), usually the county environmental health department, for clarification on any requirements before composting any non-agricultural source materials. LEAs are listed by county, along with the CIWMB composting regulations, on the Web site at www.ciwmb.ca.gov/Organics/Farming/.

For More Information

For additional information on the use of compost or mulch in vineyards, contact staff in the Organic Materials Management Section at (916) 341-6620.

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, Flex Your Power and visit www.consumerenergycenter.org/flex/index.html.